

## 作业 #4

1. Given the scores of fifteen students, arrange the scores and output them in descending order.
2. Given the scores of twenty students, output the average score and the highest score.
3. Shown below is a Pascal's triangle.

1								
1	1							
1	2	1						
1	3	3	1					
1	4	6	4	1				
1	5	10	10	5	1			
1	6	15	20	15	6	1		
1	7	21	35	35	21	7	1	

Write a program to print a 12-row Pascal's triangle.

4. Output the former 44 numbers of the Fibonacci sequence.
  - a) Using array
  - b) Using no array
5. Write a program that fills a nine-by-nine matrix as follows:
  - Lower right triangle with +1s
  - Right to left diagonal with zeros
  - Upper left triangle with -1s

Display the contents of the matrix.

[\[Sample\]](#)

-1	-1	-1	-1	-1	-1	-1	-1	0
-1	-1	-1	-1	-1	-1	-1	0	+1
-1	-1	-1	-1	-1	-1	0	+1	+1
-1	-1	-1	-1	-1	0	+1	+1	+1
-1	-1	-1	-1	0	+1	+1	+1	+1
-1	-1	-1	0	+1	+1	+1	+1	+1
-1	-1	0	+1	+1	+1	+1	+1	+1
-1	0	+1	+1	+1	+1	+1	+1	+1
0	+1	+1	+1	+1	+1	+1	+1	+1

6. **[optional]** The product of matrix A and matrix B is a third matrix C of size n\*n where each element of C is given by the following equation.

$$c_{ij} = \sum_{k=1}^n a_{ik} b_{kj}$$

Given two 3\*3 matrices **A** and **B**, write a program that will produce the product matrix **C**.

[\[Sample\]](#)

```
Matrix A:
  1  2  3
  4  5  6
  7  8  9
Matrix B:
  7  8  9
  4  5  6
  1  2  3
Matrix C:
 18  24  30
 54  69  84
 90 114 138
```